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Assessment of listing and categorisation of animal diseases within the framework of the Animal Health Law (Regulation (EU) No 2016/429): contagious caprine pleuropneumonia

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Abstract

Contagious caprine pleuropneumonia has been assessed according to the criteria of the Animal Health Law (AHL), in particular criteria of Article 7 on disease profile and impacts, Article 5 on the eligibility of contagious caprine pleuropneumonia to be listed, Article 9 for the categorisation of contagious caprine pleuropneumonia according to disease prevention and control rules as in Annex IV and Article 8 on the list of animal species related to contagious caprine pleuropneumonia. The assessment has been performed following a methodology composed of information collection and compilation, expert judgement on each criterion at individual and, if no consensus was reached before, also at collective level. The output is composed of the categorical answer, and for the questions where no consensus was reached, the different supporting views are reported. Details on the methodology used for this assessment are explained in a separate opinion. According to the assessment performed, contagious caprine pleuropneumonia can be considered eligible to be listed for Union intervention as laid down in Article 5(3) of the AHL. The disease would comply with the criteria as in Sections 4 and 5 of Annex IV of the AHL, for the application of the disease prevention and control rules referred to in points (d) and (e) of Article 9(1). The assessment here performed on compliance with the criteria as in Section 1 of Annex IV referred to in point (a) of Article 9(1) is inconclusive. The animal species to be listed for contagious caprine pleuropneumonia according to Article 8(3) criteria are goats and other species of the family Bovidae as susceptible.

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1. Introduction

1.1. Background and Terms of Reference as provided by the requestor

The background and Terms of Reference (ToR) as provided by the European Commission for the present document are reported in Section 1.2 of the scientific opinion on the ad hoc methodology followed for the assessment of the disease to be listed and categorised according to the criteria of Article 5, Annex IV according to Article 9, and 8 within the Animal Health Law (AHL) framework (EFSA AHAW Panel, 2017).

1.2. Interpretation of the Terms of Reference

The interpretation of the ToR is as in Section 1.2 of the scientific opinion on the ad hoc methodology followed for the assessment of the disease to be listed and categorised according to the criteria of Article 5, Annex IV according to Article 9, and 8 within the AHL framework (EFSA AHAW Panel, 2017).

The present document reports the results of assessment on contagious caprine pleuropneumonia (CCPP) according to the criteria of the AHL articles as follows:

- Article 7: contagious caprine pleuropneumonia profile and impacts
- Article 5: eligibility of contagious caprine pleuropneumonia to be listed
- Article 9: categorisation of contagious caprine pleuropneumonia according to disease prevention and control rules as in Annex IV
- Article 8: list of animal species related to contagious caprine pleuropneumonia.

2. Data and methodologies

The methodology applied in this opinion is described in detail in a dedicated document about the ad hoc method developed for assessing any animal disease for the listing and categorisation of diseases within the AHL framework (EFSA AHAW Panel, 2017).

3. Assessment

3.1. Assessment according to Article 7 criteria

This section presents the assessment of CCPP according to the Article 7 criteria of the AHL and related parameters (see Table 2 of the opinion on methodology (EFSA AHAW Panel, 2017)), based on the information contained in the fact sheet as drafted by the selected disease scientist (see Section 2.1 of the scientific opinion on the ad hoc methodology) and amended by the AHAW Panel.

3.1.1. Article 7(a) Disease Profile

Introduction and definition: CCPP is an infectious and contagious respiratory disease affecting goats as well as some wild ruminant species which is caused by a wall-less bacteria (Mollicute), *Mycoplasma capricolum* subsp. *capripneumoniae* (Mccp). It is characterised by a unilateral acute inflammation in the lung and pleural cavity of susceptible animals leading to large quantities of infective droplets being excreted when the animals are coughing.

3.1.1.1. Article 7(a)(i) Animal species concerned by the disease

Susceptible animal species

Parameter 1 – Naturally susceptible wildlife species (or family/orders)

Wild goat (*Capra aegagrus*), Nubian ibex (*Capra ibex nubiana*), Laristan mouflon (*Ovis orientalis laristanica*), gerenuk (*Litocranius walleri*) (Arif et al., 2007)

Tibetan antelope (*Pantholops hodgsonii*) (Yu et al., 2013)

Arabian oryx (*Oryx leucoryx*) (Chaber et al., 2014)

Sand gazelles (*Gazella marica*) (Lignereux et al., 2017)

It is probable that other wild ruminant species could be affected by CCPP; however, susceptibility to Mccp of wild species present in the Union is not known.

Parameter 2 – Naturally susceptible domestic species (or family/orders)

Goats (*Capra hircus*)

Sheep may be affected, but it is not clear if Mccp was responsible for the observed lesions (Bölske et al., 1995). *Mycoplasma ovipneumoniae* is regularly isolated from pneumonic lesions and it could play a role in the development of the lesions, notably in sheep.

Parameter 3 – Experimentally susceptible wildlife species (or family/orders)

Not known.

Parameter 4 – Experimentally susceptible domestic species (or family/orders)

None except goats.

*Reservoir animal species*Parameter 5 – Wild reservoir species (or family/orders)

It is unclear if wild ruminant species are acting as a reservoir or simply as dead-end hosts for CCPP. The recent detection of CCPP in wildlife could result either from improved diagnostic techniques and awareness or from increased contacts between goats and wildlife.

Parameter 6 – Domestic reservoir species (or family/orders)

Sheep may play the role of domestic reservoirs although there is no clear evidence on this. Similarly to wildlife, sheep could be contaminated after being in contact with infected goats. Publications before 1980 are affected by the lack of knowledge on which mycoplasma species was causing CCPP. After 1980, Mccp was detected in sheep in Kenya (Litamoi et al., 1990), in Uganda (Bölske et al., 1995) and in Ethiopia (Shiferaw et al., 2006). In a retrospective study in southern Tanzania in 2007, the seroprevalence of CCPP was estimated at 52% for the goat population and 37% for the sheep population (Mbyuzi et al., 2014). The isolation of Mccp and the presence of antibodies in sheep indicate clearly that Mccp can multiply in sheep and induce an immunological response from the infected animals. However, the long-term persistence of Mccp in sheep is yet to be proven.

3.1.1.2. Article 7(a)(ii) The morbidity and mortality rates of the disease in animal populations*Morbidity*Parameter 1 – Prevalence/ Incidence

The prevalence and incidence may vary greatly according to the local epidemiological situation and the type of diagnostic test used. In the regions where the disease is enzootic, serological surveys may result in various prevalence rates according to the locations (Peyraud et al., 2014). For example, in the Afar region in Ethiopia, 15% of the goats tested positive to the competitive enzyme-linked immunosorbent assay (cELISA) method, which is highly specific. In the Narok region, all tested goat flocks were positive (convenience sampling as owners that suffered losses from CCPP were more likely to bring their animals for vaccination) and individual prevalence ranged from 6% to 90%.

CCPP is quite common in Saudi Arabia, as more than 190 pleural fluid samples could be retrieved from 15 goat flocks from which 55 Mccp isolates could be retrieved and identified by specific polymerase chain reaction (PCR) (El-Deeb et al., 2017).

A very high seroprevalence was reported in Southern Tanzania in goats, from 35% (N = 434) to 52% (N = 447) (Mbyuzi et al., 2014). The same study reported also a high seroprevalence in sheep in the same region (23% (N = 70) to 36% (N = 30)). If confirmed, these figures may indicate that Mccp may circulate in sheep.

In eastern Turkey, where the presence of CCPP has been acknowledged over the last 20 years, in a field study conducted in 2006–2007, CCPP was suspected in 24 herds and Mccp was isolated from 37.5% of goats in 10 of those different herds located in geographically distinct areas (Çetinkaya et al., 2009). In Ethiopia, a meta-analysis conducted in 2015 reported that the pooled prevalence estimate for CCPP for goat samples collected at abattoir was 39.2%, while that of samples collected at field level was 22.4% (Asmare et al., 2016). In Borana pastoral areas of Ethiopia, where outbreaks of CCPP have been reported from almost all regions of the country, during June–September 2004, 217 goats were examined in the abattoir for the presence of CCPP lesions with 21 (9.7%) showing pathological lesions, whereas the prevalence rate for those aged 1–2 years was 13.3% (Gelagay et al., 2007).

The data on CCPP prevalence are quite scarce because:

- Mccp is difficult to isolate in laboratories with no specific skills regarding this pathogen.
- Goats are frequently infected by other mycoplasmas of the *M. mycoides* cluster and CCPP is often confused with these infections or with peste des petits ruminants (PPR) which is the most frequently found in many parts of the world. Therefore, PCR is often not performed although this should be the routine procedure for CCPP identification.
- The cELISA for CCPP has been marketed only recently by IDEXX and is not routinely used.

Parameter 2 – Case morbidity rate (% clinically diseased animals out of infected ones)

In experimental infections, the transmission of the disease by intubation or by contact is often very successful, with about 100% of the goats showing symptoms (MacOwan and Minette, 1978; Harbi et al., 1983).

In the case of an introduction into a fully naïve population, the morbidity can be high. This was the case when CCPP was firstly introduced in South Africa (Hutcheon, 1881) from Turkey, and morbidity reached more than 80%.

In Greece, CCPP was demonstrated between 1920 and 1930 (Stylianopoulos, 1933). Morbidity was maximal (98%).

In Eritrea, morbidity reached 90% in two affected goat herds in 1997 (Houshaymi et al., 2002).

Thomas records morbidity values that range from 5% at lower altitudes to 30% and up to 56% or 68% at higher altitude (cold weather is thought to be a predisposing factor) (Thomas, 1873).

In eastern Turkey, CCPP was suspected in 24 herds, which comprised 1,122 animals, and within these herds, 459 animals (41%) showed respiratory distress (Çetinkaya et al., 2009).

Mortality

Parameter 3 – Case fatality rate

In the case of acute outbreaks, the case fatality rate is very high when no antibiotics are administered. In old observations, it is very often the crude mortality rate that is recorded (proportion of dead animals out of the whole population) and it may be higher than 75% (Hutcheon, 1881).

In Greece, it varied from herd to herd from 60% to 94% (Stylianopoulos, 1933).

In Algeria, it varied from 50% to 75% (Thomas, 1873).

In Kenya, mortality rates reached more than 50% during natural outbreaks (Litamoi et al., 1989).

In the United Arab Emirates, the mortality in herds of Sand Gazelles affected by CCPP reached 70% (Lignereux et al., 2017).

In Oman, nearly 600 outbreaks caused by CCPP were reported between 2008 and 2009 with mortality rates of nearly 10% of 30,000 cases (Nicholas and Churchward, 2012). There are few reports with only limited mortality. This was the case during an experimental infection in Kenya, where 50% of the goats were infected (8/17), but no mortality was observed (Wesonga et al., 2004). All authors agreed on the fact that mortality rates declined progressively in affected herds as time went by.

As there are a number of antibiotics that are efficient to treat CCPP, it is to be expected that the observed mortality/mortality rates in the field, in developed countries, would be much lower.

3.1.1.3. Article 7(a)(iii) The zoonotic character of the disease

CCPP is not zoonotic.

3.1.1.4. Article 7(a)(iv) The resistance to treatments, including antimicrobial resistance

Parameter 1 – Resistant strain to any treatment even at laboratory level

There are no publications available on Mccp antimicrobial resistance. However, similarly to other mycoplasmas, it is quite common to observe resistant variants to a number of antibiotics. For example, mutations conferring resistance to erythromycin are observed with a probability of $10^{-7.5}$, a higher value than for the closely related *M. capricolum* subsp. *capricolum* (Thiaucourt, 2017). Nevertheless, animals are not treated in the European Union (EU) against Mccp infection; there would not be any significant danger to animal health as a consequence of possible development of drug resistance.

3.1.1.5. Article 7(a)(v) The persistence of the disease in an animal population or the environment

Animal population

Parameter 1 – Duration of infectious period in animals

The duration of the infectious period has been estimated at about 19 days by an *in silico* model (Lignereux et al., 2017). However, from a practical point of view, two phases of the disease should be considered:

- The acute stage where excretion is maximum, and when the lungs are filled with exudate containing very high concentrations of Mccp (10^9 /mL). This stage is short and may last from 5 to 10 days until animals die (most frequent case in the absence of antibiotic treatment) or recover.
- The recovery stage when affected animals may still shed Mccp until they are completely recovered. However, there is no precise data on the duration of this stage.

The exact persistence of infectivity after the acute phase in surviving animals is not known.

Parameter 2 – Presence and duration of latent infection period

This parameter was estimated with an *in silico* model at 7 days (Lignereux et al., 2017).

Parameter 3 – Presence and duration of the pathogen in healthy carriers

There are very few data concerning this aspect. Mccp is able to survive in animals not showing any clinical sign and some differences exist in breed susceptibility. In Tunisia, for example, CCPP was clinically evident in alpine goats imported from France, while the local goats apparently were not affected (Perreau, 1982). Similarly, CCPP was introduced from Turkey to South Africa with a shipment of angora goats that were transported by boat. The travel lasted 7 weeks, and no symptoms were observed during the transport (Hutcheon, 1881).

Environment

Parameter 4 – Length of survival (dpi) of the agent and/or detection of DNA in selected matrices (soil, water, air) from the environment (scenarios: high and low T)

While there is no experimental data published in support, it appears that Mccp is more fragile than *Mycoplasma mycoides* subsp. *mycoides* (Mmm) (the agent of contagious bovine pleuropneumonia (CBPP)) and does not survive in the environment.

3.1.1.6. Article 7(a)(vi) The routes and speed of transmission of the disease between animals and, when relevant, between animals and humans

Routes of transmission

Parameter 1 – Types of routes of transmission from animal to animal (horizontal, vertical)

To summarise the routes of transmission based on their importance:

- Direct contact is the main source of contamination/transmission (OIE, 2009)
- Some cases of distant spread have been speculated to occur by airborne transmission (Lignereux et al., 2017)
- Vectors are not considered to play any role in the transmission of CCPP
- Fomites are not considered to play any role in the transmission of CCPP
- Animal products do not play any role in the transmission of CCPP
- Environmental contamination is considered negligible due to the fragility of mycoplasmas

This information is inferred from the knowledge gained with CBPP. The two diseases are very similar except that Mccp is even more fragile than Mmm.

There are so few well-described outbreaks of CCPP that actual figures cannot be retrieved.

Parameter 2 – Types of routes of transmission between animals and humans (direct, indirect, including food-borne)

None.

Speed of transmission

Parameter 3 – Incidence between animals and, when relevant, between animals and humans

No published data exist for CCPP.

Parameter 4 – Transmission rate (beta) (from R_0 and infectious period) between animals and, when relevant, between animals and humans

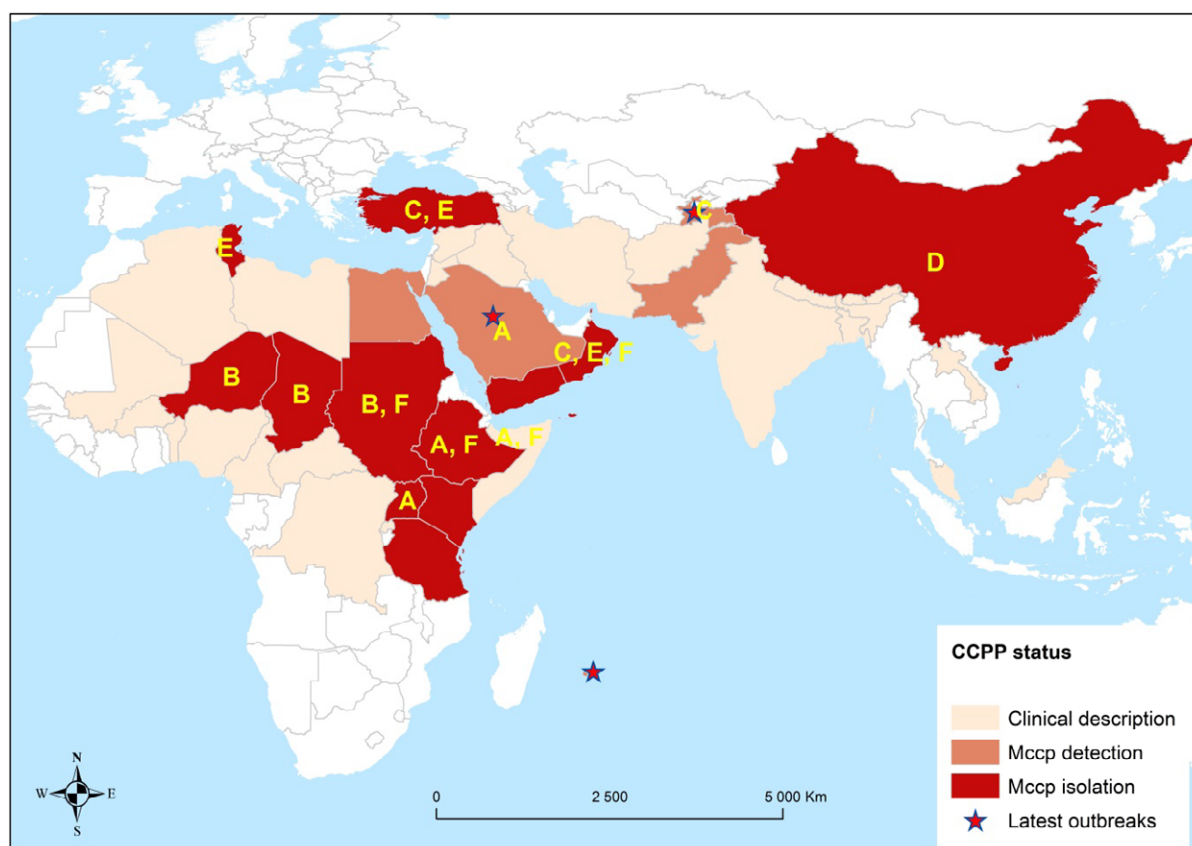
R_0 has been established at around 2.5 for gazelles in an environment that was very favourable to transmission (high densities of animals held in pens) (Lignereux et al., 2017). Hence, the value for goats in the field may be lower.

3.1.1.7. Article 7(a)(vii) The absence or presence and distribution of the disease in the Union, where the disease is not present in the Union, the risk of its introduction into the Union

Presence and distribution

Parameter 1 – Map where the disease is present in EU

CCPP is not present (not detected) in the EU and not included in the list of notifiable diseases of sheep and goats (Figure 1).



The letters refer to the genotypes as stated in Dupuy et al. (2015).

Figure 1: CCPP distribution as reported to the World Organization for Animal Health (OIE) (adapted from Peyraud et al., 2014)–

The latest outbreaks were reported in Saudi Arabia. In that case, however, it reflects more a recent interest in reporting CCPP rather than a new introduction as the Middle East has been considered infected for a very long time. These data combine all the epidemiological information which has been available since the identification of Mccp in 1976. Once established in a country, CCPP is supposed to become endemic (in spite of the absence of subsequent official declarations) because of the lack of efficient control/eradication strategies.

Risk of introduction

Parameter 3 – Routes of possible introduction

CCPP is present in the Thrace region of Turkey, which borders Bulgaria and Greece.

CCPP may enter into the EU and remain hidden due to the inability to isolate Mccp by 'most standard labs' and the use of antibiotics to treat infectious diseases (CCPP being confused with any other mycoplasmosis that may induce similar lesions (Thiaucourt and Bölske, 1996)).

Wildlife may represent an additional risk (importation or exchanges by zoos).

Parameter 4 – Number of animal moving and/or shipment size

Importation of animals susceptible to CCPP from Turkey to the EU is prohibited on the basis of Council Directive 2004/68/EC,¹ establishing the general animal health conditions for the import into the Union of ovine and caprine, and in Commission Regulation (EU) 206/2010², providing the list of the non-EU countries authorised for the introduction into the EU of certain animal species. Undocumented movements represent the main risk of introduction, and such movements are difficult to trace although it is known that they may occur (e.g. occasional undocumented trespassing from Turkish Thrace to Greece or Bulgaria is not absolutely excluded, but both MSs take active measures to prevent such illegal movement).

Parameter 5 – Duration of infectious period in animal and/or commodity

See Section 3.1.1.5.

Parameter 6 – List of control measures at border (testing, quarantine, etc.)

Ban of import from infected zones.

Parameter 7 – Presence and duration of latent infection and/or carrier status

As stated in Section 3.1.1.5, Parameter 3, there is no data on the duration of carrier status. There is an historical example showing that this carrier stage may last for quite long as CCPP was introduced into the Cape Colony in 1881 with a shipment of goats from Turkey. These animals had been moved by boat. The trip lasted 7 weeks and no illness was evident in those goats until they were sold and transmitted the disease to local goats (Hutcheon, 1881).

Parameter 8 – Risk of introduction

Entry of contaminated goats into the EU

This risk is considered 'as likely as not'.

The most obvious risk for introduction of CCPP into the EU lies at the borders with Turkey, as CCPP was reported in the Thrace region (Ozdemir et al., 2005). However, CCPP has also been reported in the eastern part of Turkey (Çetinkaya et al., 2009). Therefore, it is probable that CCPP also circulates in Armenia and Georgia, which have common borders with Russia. There is then a risk that CCPP distribution could extend to southern Russia.

In 2005, the borders between Turkey and Bulgaria or Greece were certainly not as tight as they are now because of the migrant crisis.

The only way to evaluate this risk would be to establish a serosurveillance programme in the regions bordering Turkey:

- Use of the cELISA which is strictly specific: random selection of herds and targeted selection of animals in the herds (those that are older or showed respiratory signs in the past two years) to increase sensitivity while maintaining specificity at the herd level.
- Awareness campaign for goat herd owners, technicians and vets in the same region to ensure proper reporting of suspicious cases.

¹ Council Directive 2004/68/EC of 26 April 2004 laying down animal health rules for the importation into and transit through the Community of certain live ungulate animals, amending Directives 90/426/EEC and 92/65/EEC and repealing Directive 72/462/EEC. OJ L 139, 30.4.2004, p. 321–360.

² Commission Regulation (EU) No 206/2010 of 12 March 2010 laying down lists of third countries, territories or parts thereof authorised for the introduction into the European Union of certain animals and fresh meat and the veterinary certification requirements. OJ L 73, 20.3.2010, p. 1–121.

The risk linked to uncontrolled movement of goats from the Maghreb region into the EU is not considered very likely because, if that occurred, PPR, which is present in that region, would have been detected.

Importing wildlife for zoos from infected zones (Asia, Africa; Middle East, etc.) should be followed with great care

This risk is considered very unlikely, as these animals are seldom in contact with infected goats and that distance transmission of CCPP is not frequent.

The risk could be mitigated by performing a serological test either at the individual level or better at the herd level at the origin of import. The cELISA is not officially validated for species other than goats but as it is based on a competition, it can detect antibodies in infected animals other than goats. It has been used successfully in sand gazelles.

If wild/zoo animals have been properly vaccinated, they should become serologically positive, provided that a correct vaccine has been used.

3.1.1.8. Article 7(a)(viii) The existence of diagnostic and disease control tools

Diagnostic tools

Parameter 1 – Existence of diagnostic tools

Direct detection of Mccp

- Isolation of Mccp is very difficult due to the fastidiousness of this mycoplasma. Isolation requires very rich media which are not in routine use. Colonies are very small, especially upon primary isolation, and require stereomicroscopes for observations. Consequently, labs which perform routine diagnostic procedures are not able to isolate Mccp.

Specific PCR and quantitative PCR (Q-PCR): A specific PCR was developed in 2004 (Woubit et al., 2004). Another PCR was developed earlier, but it required a digestion of the amplified product to achieve identification (Bascunana et al., 1994).

A Q-PCR was then developed based on the same primers (Lorenzon et al., 2008). However, sensitivity is not an issue when acute CCPP cases are found, as the mycoplasma concentration is huge in the pleural fluid.

A multiplex PCR was developed to detect Mccp as well as other goat pathogens (Settypalli et al., 2016).

- Fine differentiation of strains can be achieved by an extended multilocus sequence analysis (MLSA) technique. This technique allowed the identification of six clades within Mccp strains (now seven with an additional strain from China) (Dupuy et al., 2015).

Assembling full Mccp genomes is quite easy due to the good conservation of genome organisation.

Indirect detection

The complement fixation test (CFT) should not be used for CCPP as there are many cross reactions within the *M. mycoides* cluster species, or closely related species, that can be found in goats (*M. capricolum* subsp. *capricolum*, *M. mycoides* subsp. *capri*, *M. leachii*, *M. putrefaciens*, *M. ferriruminatoris*, etc.).

There is an agglutination test based on latex beads sensitised with polysaccharides (CapriLAT, APHA diagnostics). This test can be used to detect ongoing or recent outbreaks as it detects mostly IgMs. However, Mccp shares the same polysaccharide at its surface with *M. capricolum* subsp. *capricolum* and also *M. leachii*. There are therefore risks of false positive reactions.

There is now a specific cELISA test developed and validated at CIRAD (Validation dossier accepted by the French Committee of Accreditation for CIRAD to be accredited ISO 17025 for this technique) (Thiaucourt et al., 1994). This technique was used to evaluate the prevalence of CCPP in countries like Kenya, Ethiopia, Mauritius, Tajikistan or Pakistan (Peyraud et al., 2014). This test can also be used to verify the seroconversion in vaccinated animals. This test is marketed by IDEXX: Part Number: 99-56231.

Control tools

Parameter 2 – Existence of control tools

There are basically four main control measures for CCPP: slaughter, control of movement, antibiotic treatments and vaccination.

A strategy for the control/eradication of CCPP will inevitably be a combination of these control measures that must be applied either at individual or at herd level and in a timely spatiotemporal way.

Slaughter and control of animal movement will not be discussed, as these are not specific for CCPP.

Antibiotic treatments

Although antibiotic treatments are banned when CCPP is diagnosed, there is a significant chance that these treatments are administered by veterinarians when respiratory signs are detected in goat herds, and before any definitive diagnostic result is obtained. There are also significant chances that CCPP signs will be confused with other *Mycoplasma* infections.

These antibiotic treatments may be quite effective, and they will lead to a lack of detection and possible unnoticed expansion of the disease unless some specific lesions are discovered (and confirmed as CCPP) after slaughter. Unfortunately, necropsies are not regularly performed on dead goats.

Mycoplasma infections are usually treated with macrolide, lincosamide, streptogramins, fluoroquinolones and tetracyclines. Currently, Mccp strains are susceptible to these classes of antibiotics and so far only strains resistant to erythromycin have been detected. However, due to a higher mutation rate, Mccp strains are likely to become resistant to these antibiotics by modification of the antibiotic targets.

Vaccines

Inactivated and saponin adjuvanted vaccines were developed (Rurangirwa et al., 1981, 1984, 1987a,b), and they proved efficient in the field (Litamoi et al., 1989).

Their main drawback is their cost due to the difficulties in Mccp growth, requiring rich medium and quite large doses of purified antigen (0.15 mg) to induce a correct protection. There are few CCPP vaccine producers in Africa (NVI Ethiopia, KEVEVAPI, Kenya) and in the Middle East (JOVAC Jordan, IBRIZE Saudi Arabia, VETAL Turkey) or in China.

Previous experience at CIRAD has shown that some doubts could be raised on the proper quality of these vaccines, especially in relation to the requirements of the European Pharmacopoeia (Thiaucourt, 2017).

There is a need for the development of more efficient and cheaper vaccines for CCPP.

3.1.2. Article 7(b) The impact of diseases

3.1.2.1. Article 7(b)(i) The impact of the disease on agricultural and aquaculture production and other parts of the economy

The level of presence of the disease in the Union

Parameter 1 – Number of MSs where the disease is present

None.

The loss of production due to the disease

Parameter 2 – Proportion of production losses (%) by epidemic/endemic situation

Precise data are not available.

In the case of an epizootic situation, the cumulative mortality can reach 70% when there is no antibiotic treatment in place. This has been observed in goats (Thiaucourt, 2017) in Ethiopia, in 1991.

However, in case of introduction into the EU, it can be expected that infected goats would be treated with antibiotics, and this would reduce the losses. In any case, it is expected that treated goats may not recover completely because of the lung lesions and adherent scar tissue.

Pregnant goats may abort (due to high fever). Milk production can be reduced not because of mastitis but simply because of fever and general dullness. However, no quantitative estimates are available in the bibliography.

Usually, goats are raised mostly for milk; hence, there is no important impact on meat production.

3.1.2.2. Article 7(b)(ii) The impact of the disease on human health

Not applicable as CCPP is not zoonotic.

3.1.2.3. Article 7(b)(iii) The impact of the disease on animal welfare

Parameter 1 – Severity of clinical signs at case level and related level and duration of impairment

CCPP is very painful because of the severity of the pleuropneumonia lesions lasting maximally 10 days for the acute form. Recovered animals also suffer because of fibrous scar tissues adhering between the lungs and the pleura.

3.1.2.4. Article 7(b)(iv) The impact of the disease on biodiversity and the environment

Biodiversity

Parameter 1 – Endangered wild species affected: listed species as in CITES and/or IUCN list

It is suspected that all wild ruminant species can be affected by CCPP.

Parameter 2 – Mortality in wild species

The mortality in wild species can be very high; levels up to 70% are recorded in sand gazelles in the United Arab Emirates.

Environment

Parameter 3 – Capacity of the pathogen to persist in the environment and cause mortality in wildlife

There is no persistence in the environment.

3.1.3. Article 7(c) Its potential to generate a crisis situation and its potential use in bioterrorism

Parameter 1 – Listed in OIE/CFSPH classification of pathogens

CCPP is listed in the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals 2017 (OIE, 2017), but not in the CFSPH for potential bioterrorism and agroterrorism agents.

Parameter 2 – Listed in the Encyclopaedia of Bioterrorism Defence of Australia Group

Although CCPP is listed in the list of human and animal pathogens and toxins for export control from the Australia Group, it is not listed in the Encyclopaedia of Bioterrorism Defense of Australia Group.

Parameter 3 – Included in any other list of potential bio-agroterrorism agents

It is not listed.

3.1.4. Article 7(d) The feasibility, availability and effectiveness of the following disease prevention and control measures

3.1.4.1. Article 7(d)(i) Diagnostic tools and capacities

Availability

Parameter 1 – Officially/internationally recognised diagnostic tool, OIE certified

Complement fixation test, latex agglutination and cELISA are not yet recognised as OIE certified tests. CFT should be abandoned as it is not specific.

The cELISA is now produced by IDEXX (Part Number: 99-56231) and all batches are quality assured by CIRAD before release.

Effectiveness

Parameter 2 – Se and Sp of diagnostic test

The cut-off of the cELISA has been set at 55 PI to obtain a very high specificity (99.9%) when performed under quality assurance.

This high specificity is detrimental to individual sensitivity. The test is, therefore, conceived as a herd test.

In any case, herds are considered the most appropriate epidemiological unit to control CCPP.

*Feasibility*Parameter 3 – Type of sample matrix to be tested (blood, tissue, etc.)

Serum.

3.1.4.2. Article 7(d)(ii) Vaccination*Availability*Parameter 1 – Types of vaccines available on the market (live, inactivated, DIVA, etc.)

Inactivated adjuvant vaccines (0.15 mg *Mycoplasma* antigen and 3 mg saponin).

Parameter 2 – Availability/production capacity (per year)

Very limited so far. Ethiopia and Kenya are even not meeting their own internal needs (about 2 million doses produced yearly). Other producers in the Middle East may soon put some products on the market (JOVAC in Jordan, IBRIZE in Saudi Arabia).

*Effectiveness*Parameter 3 – Field protection as reduced morbidity (as reduced susceptibility to infection and/or to disease)

Very limited data are available. There is a very good protection when the vaccine is produced correctly (Rurangirwa et al., 1987a,b).

Parameter 4 – Duration of protection

The duration of protection is at least one year.

*Feasibility*Parameter 5 – Way of administration

It is administered subcutaneously. The presence of saponin may induce a transient local reaction and dullness in vaccinated animals for 24 h.

3.1.4.3. Article 7(d)(iii) Medical treatments*Availability*Parameter 1 – Types of drugs available on the market

Mccp is susceptible to classes of antibiotics used to treat *Mycoplasma* infections, e.g. macrolides, lincosamide, streptogramins, fluoroquinolones and tetracyclines. However, no treatment is applied.

Parameter 2 – Availability/production capacity (per year)

These classes of antibiotics are available commercially without any shortage problem.

*Effectiveness*Parameter 3 – Therapeutic effects on the field (effectiveness)

Antibiotics are able to cure the symptoms if they appear sufficiently rapidly. The problem with goats is that they very often do not show overt signs of disease until the lesions are quite extensive. In that case, it may be advisable to treat the entire flock when CCPP is identified.

*Feasibility*Parameter 4 – Way of administration

It depends on the type of antibiotic.

3.1.4.4. Article 7(d)(iv) Biosecurity measures

Availability

Parameter 1 – Available biosecurity measures

Quarantine is not to be considered, as the exact duration of carrier state for CCPP is not known. Long quarantine periods neither would be economically feasible nor would they ensure that the animals are not Mccp carriers at the end of the quarantine period.

In an outbreak, once animals have been slaughtered, disinfection will ensure that Mccp will effectively and very rapidly be destroyed. Classical disinfectants are active on mycoplasmas (e.g. bleach, detergents).

Effectiveness

Parameter 2 – Effectiveness of biosecurity measures in preventing the pathogen introduction

Quarantine is not considered an effective measure to prevent CCPP introduction. Disinfection of premises and operators boots will effectively prevent the spread of Mccp. In any case, the risk lies in the presence of Mccp-contaminated droplets being transported at a distance which could infect other herds in the vicinity. It is, therefore, important to consider avoiding devices which may generate such aerosols (high pressure devices).

Feasibility

Parameter 3 – Feasibility of biosecurity measures

Spraying disinfectants and preparing disinfectant baths at the entry of the facilities can be easily implemented.

3.1.4.5. Article 7(d)(v) Restrictions on the movement of animals and products

Availability

Parameter 1 – Available movement restriction measures

CCPP being spread by direct contact, the restriction of movement will be effective. The difficulty will be to determine the zone that is considered infected.

Effectiveness

Parameter 2 – Effectiveness of restriction of animal movement in preventing the between-farm spread

Prohibiting the import of goats from infected zones or countries is the only way to prevent CCPP introduction. This measure can be effective unless wind transport of infected droplets may lead to distant contaminations between farms. This distance has been proven to be at least 80 m, but longer distances have to be taken for granted if a parallel is made with CBPP or other *Mycoplasma* diseases, for which distances up to at least 9 km have been reported (Otake et al., 2010). Nevertheless, given the very low resistance of Mccp in the environment, the probability of occurrence of such high distance transmission by wind currents is very unlikely.

Feasibility

Parameter 3 – Feasibility of restriction of animal movement

Restriction of goat movements in case of CCPP outbreaks will be feasible only if CCPP is included in the list of notifiable diseases in all Member States. This inclusion could assist into implement the local regulations prohibiting movements and deploying the forces that are able to ensure the effectivity of the measures.

3.1.4.6. Article 7(d)(vi) Killing of animals

Availability

Parameter 1 – Available methods for killing animals

Again, because CCPP is transmitted by live animals shedding *Mycoplasma*-contaminated droplets, slaughter is the ultimate means to cut the epidemiological cycle.

This killing has to be considered at the herd level for faster and greater efficiency (and also because vaccines are neither readily available in the EU nor authorised).

Effectiveness

Parameter 2 – Effectiveness of killing animals (at farm level or within the farm) for reducing /stopping spread of the disease

This is highly effective and certainly the most efficient way to eradicate CCPP.

However, it must be noted that this strategy would be efficient in eradicating CCPP only if applied to all herds in the infected zone.

Feasibility

Parameter 3 – Feasibility of killing animals

Killing animals is easy to perform from a technical point of view. Humane slaughter of affected herds can be implemented as there is no zoonotic risk and very limited risk of distance transmission from infected droplets. Slaughter areas can be disinfected afterward with classical disinfectants. *Mycoplasmas* do not have a cell wall and will be rapidly inactivated.

However, some reluctance is to be expected from the goat owners, especially if the culling strategy has to be applied on a large scale.

3.1.4.7. Article 7(d)(vii) Disposal of carcasses and other relevant animal by-products

CCPP is not zoonotic, and Mccp does not persist in the environment. Therefore, there are no specific measures for the disposal of carcasses.

3.1.5. Article 7(e) The impact of disease prevention and control measures

3.1.5.1. Article 7(e)(i) The direct and indirect costs for the affected sectors and the economy as a whole

Parameter 1 – Cost of control (e.g. treatment/vaccine, biosecurity)

As for CBPP, this cost is impossible to predict. The example of *Mycoplasma bovis* infection in the EU has shown that treatments were not sufficient to prevent the slow but unstoppable expansion of the infection with examples in Switzerland and Austria (Bürki et al., 2016).

Although no official control measures are foreseen in Europe, except slaughter, for CCPP a combined strategy including the treatment of sick animals and vaccination of all others may lead to eradication. However, this strategy has never been used experimentally in the field.

Other costs

The cost of surveillance and monitoring will depend on the local situation.

In terms of trade loss, living goats will not be able to be exchanged as CCPP is an OIE notifiable disease.

However, goat milk and cheese or meat are not considered as dangerous products; hence, the economic impact of the ban on living animals movements may be limited.

3.1.5.2. Article 7(e)(ii) The societal acceptance of disease prevention and control measures

Culling goats may prove to be difficult as these animals are sometimes considered as pets.

3.1.5.3. Article 7(e)(iii) The welfare of affected subpopulations of kept and wild animals

Parameter 1 – Welfare impact of control measures on domestic animals

There are theoretically no welfare issue as humane slaughtering will be implemented.

Parameter 2 – Wildlife depopulation as control measure

There is no welfare issue so far as no European wildlife is considered susceptible to CCPP. In case of outbreaks in zoo animals, humane slaughtering will be implemented.

3.1.5.4. Article 7(e)(iv) The environment and biodiversity

Environment

Parameter 1 – Use and potential residuals of biocides or medical drugs in environmental compartments (soil, water, feed, manure)

Antibiotic treatments for CCPP are likely to induce the emergence of resistant Mccp strains. This is the reason why eradication through slaughter should be advocated.

Biodiversity

Parameter 2 – Mortality in wild species

Mortality may be very high in wild species (for example, 70% in sand gazelles). Therefore, CCPP could be considered a potential risk for endangered species. In Tajikistan, CCPP has been suspected to occur in markhors (*Capra falconeri*), which is considered now as 'near threatened' by the IUCN.

3.2. Assessment according to Article 5 criteria

This section presents the results of the expert judgement on the criteria of Article 5 of the AHL about CCPP (Table 1). The expert judgement was based on Individual and Collective Behavioural Aggregation (ICBA) approach described in detail in the opinion on the methodology (EFSA AHAW Panel, 2017). Experts have been provided with information of the disease fact sheet mapped into Article 5 criteria (see supporting information, Annex A), based on that the experts indicate their Y/N or 'na' judgement on each criterion of Article 5, and the reasoning supporting their judgement.

The minimum number of judges in the judgement was 12. The expert judgement was conducted as described in the methodological opinion (EFSA AHAW Panel, 2017). For details on the interpretation of the questions, see Appendix B of the methodological opinion (EFSA AHAW Panel, 2017).

Table 1: Outcome of the expert judgement on the Article 5 criteria for contagious caprine pleuropneumonia

Criteria to be met by the disease:		Final outcome
According to AHL, a disease shall be included in the list referred to in point (b) of paragraph 1 of Article 5 if it has been assessed in accordance with Article 7 and meets all of the following criteria		
A(i)	The disease is transmissible	Y
A(ii)	Animal species are either susceptible to the disease or vectors and reservoirs thereof exist in the Union	Y
A(iii)	The disease causes negative effects on animal health or poses a risk to public health due to its zoonotic character	Y
A(iv)	Diagnostic tools are available for the disease	Y
A(v)	Risk-mitigating measures and, where relevant, surveillance of the disease are effective and proportionate to the risks posed by the disease in the Union	Y
At least one criterion to be met by the disease:		
In addition to the criteria set out above at points A(i)–A(v), the disease needs to fulfil at least one of the following criteria		
B(i)	The disease causes or could cause significant negative effects in the Union on animal health, or poses or could pose a significant risk to public health due to its zoonotic character	Y
B(ii)	The disease agent has developed resistance to treatments and poses a significant danger to public and/or animal health in the Union	NC
B(iii)	The disease causes or could cause a significant negative economic impact affecting agriculture or aquaculture production in the Union	Y
B(iv)	The disease has the potential to generate a crisis or the disease agent could be used for the purpose of bioterrorism	NC
B(v)	The disease has or could have a significant negative impact on the environment, including biodiversity, of the Union	NC

Colour code: green = consensus (Yes/No), yellow = non-consensus (NC).

3.2.1. Non-consensus questions

This section displays the assessment related to each criterion of Article 5 where no consensus was achieved in form of tables (Tables 2–4). The proportion of Y, N or na answers are reported, followed by the list of different supporting views for each answer.

Table 2: Outcome of the expert judgement related to criterion 5 B(ii)

Question	Final outcome	Response		
		Y (%)	N (%)	na (%)
B(ii) The disease agent has developed resistance to treatments and poses a significant danger to public and/or animal health in the Union	NC	0	42	58

NC: non-consensus; number of judges: 12.

Reasoning supporting the judgement

Supporting No:

- There are no studies of antimicrobial resistance for this specific pathogen reported.
- Antimicrobial resistance is quite common in other mycoplasma species, and also Mccp could potentially develop it. However, there is no treatment allowed; therefore, the impact on animal or public health is not significant.

Supporting na:

- There is a lack of data.

Table 3: Outcome of the expert judgement related to criterion 5 B(iv)

Question	Final outcome	Response		
		Y (%)	N (%)	na (%)
B(iv) The disease has the potential to generate a crisis or the disease agent could be used for the purpose of bioterrorism	NC	33	67	0

NC: non-consensus; number of judges: 12.

Reasoning supporting the judgement

Supporting Yes:

- Even if the disease is not listed for bioterrorism, there are probably huge consequences on intracommunity trade and EU exports for sheep and goats due to trade restriction.
- It is not listed; however, both the disease and any response would likely generate a crisis in the period after introduction.

Supporting No:

- It is not listed as potential agent for bioterrorism and unlikely to generate a crisis.

Table 4: Outcome of the expert judgement related to criterion 5 B(v)

Question	Final outcome	Response		
		Y (%)	N (%)	na (%)
B(v) The disease has or could have a significant negative impact on the environment, including biodiversity, of the Union	NC	0	8	92

NC: non-consensus; number of judges: 12.

Reasoning supporting the judgement

Supporting No:

- There is no evidence of significant effect on wild ruminants/European wildlife. The disease would only affect populations that are not endangered.

Supporting na:

- There is not enough information, it is not known how many species have been challenged and not been affected (of concern in wild ruminants in other regions).

3.2.2. Outcome of the assessment of contagious caprine pleuropneumonia according to criteria of Article 5(3) of the AHL on its eligibility to be listed

As from the legal text of the AHL, a disease is considered eligible to be listed as laid down in Article 5 if it fulfils all criteria of the first set from A(i) to A(v) and at least one of the second set of criteria from B(i) to B(v). According to the assessment methodology (EFSA AHAW Panel, 2017), a criterion is considered fulfilled when the outcome is 'Yes'. According to the results shown in Table 1, CCPP complies with all criteria of the first set and with two criteria of the second set; therefore, it is considered eligible to be listed for Union intervention as laid down in Article 5(3) of the AHL.

3.3. Assessment according to Article 9 criteria

This section presents the results of the expert judgement on the criteria of Annex IV referring to categories as in Article 9 of the AHL about CCPP (Tables 5–9). The expert judgement was based on ICBA approach described in detail in the opinion on the methodology. Experts have been provided with information of the disease fact sheet mapped into Article 9 criteria (see supporting information, Annex A), based on that the experts indicate their Y/N or 'na' judgement on each criterion of Article 9, and the reasoning supporting their judgement.

The minimum number of judges in the judgement was 12. The expert judgement was conducted as described in the methodological opinion (EFSA AHAW Panel, 2017). For details on the interpretation of the questions, see Appendix B of the methodological opinion (EFSA AHAW Panel, 2017).

Table 5: Outcome of the expert judgement related to the criteria of Section 1 of Annex IV (category A of Article 9) for contagious caprine pleuropneumonia

Criteria to be met by the disease:		Final outcome
The disease needs to fulfil all of the following criteria		
1	The disease is not present in the territory of the Union or present only in exceptional cases (irregular introductions) or present only in a very limited part of the territory of the Union	Y
2.1	The disease is highly transmissible	NC
2.2	There are possibilities of airborne or waterborne or vector-borne spread	NC
2.3	The disease affects multiple species of kept and wild animals or single species of kept animals of economic importance	Y
2.4	The disease may result in high morbidity and significant mortality rates	Y
At least one criterion to be met by the disease:		
In addition to the criteria set out above at points 1–2.4, the disease needs to fulfil at least one of the following criteria		
3	The disease has a zoonotic potential with significant consequences on public health, including epidemic or pandemic potential or possible significant threats to food safety	N
4	The disease has a significant impact on the economy of the Union, causing substantial costs, mainly related to its direct impact on the health and productivity of animals	Y
5(a)	The disease has a significant impact on society, with in particular an impact on labour markets	N
5(b)	The disease has a significant impact on animal welfare, by causing suffering of large numbers of animals	Y
5(c)	The disease has a significant impact on the environment, due to the direct impact of the disease or due to the measures taken to control it	NC
5(d)	The disease has a significant impact on a long-term effect on biodiversity or the protection of endangered species or breeds, including the possible disappearance or long-term damage to those species or breeds	NC

Colour code: green = consensus (Yes/No), yellow = non-consensus (NC).

Table 6: Outcome of the expert judgement related to the criteria of Section 2 of Annex IV (category B of Article 9) for contagious caprine pleuropneumonia

Criteria to be met by the disease: The disease needs to fulfil all of the following criteria		Final outcome
1	The disease is present in the whole or part of the Union territory with an endemic character, and (at the same time) several Member States or zones of the Union are free of the disease	N
2.1	The disease is moderately to highly transmissible	NC
2.2	There are possibilities of airborne or waterborne or vector-borne spread	NC
2.3	The disease affects single or multiple species	Y
2.4	The disease may result in high morbidity with in general low mortality	N
At least one criterion to be met by the disease: In addition to the criteria set out above at points 1–2.4, the disease needs to fulfil at least one of the following criteria		
3	The disease has a zoonotic potential with significant consequences on public health, including epidemic potential or possible significant threats to food safety	N
4	The disease has a significant impact on the economy of the Union, causing substantial costs, mainly related to its direct impact on the health and productivity of animals	Y
5(a)	The disease has a significant impact on society, with in particular an impact on labour markets	N
5(b)	The disease has a significant impact on animal welfare, by causing suffering of large numbers of animals	Y
5(c)	The disease has a significant impact on the environment, due to the direct impact of the disease or due to the measures taken to control it	NC
5(d)	The disease has a significant impact on a long-term effect on biodiversity or the protection of endangered species or breeds, including the possible disappearance or long-term damage to those species or breeds	NC

Colour code: green = consensus (Yes/No), yellow = non-consensus (NC).

Table 7: Outcome of the expert judgement related to the criteria of Section 3 of Annex IV (category C of Article 9) for contagious caprine pleuropneumonia

Criteria to be met by the disease: The disease needs to fulfil all of the following criteria		Final outcome
1	The disease is present in the whole or part of the Union territory with an endemic character	N
2.1	The disease is moderately to highly transmissible	NC
2.2	The disease is transmitted mainly by direct or indirect transmission	Y
2.3	The disease affects single or multiple species	Y
2.4	The disease usually does not result in high morbidity and has negligible or no mortality AND often the most observed effect of the disease is production loss	N
At least one criterion to be met by the disease: In addition to the criteria set out above at points 1–2.4, the disease needs to fulfil at least one of the following criteria		
3	The disease has a zoonotic potential with significant consequences on public health or possible significant threats to food safety	N
4	The disease has a significant impact on the economy of parts of the Union, mainly related to its direct impact on certain types of animal production systems	N
5(a)	The disease has a significant impact on society, with in particular an impact on labour markets	N
5(b)	The disease has a significant impact on animal welfare, by causing suffering of large numbers of animals	Y
5(c)	The disease has a significant impact on the environment, due to the direct impact of the disease or due to the measures taken to control it	NC

5(d)	The disease has a significant impact on a long-term effect on biodiversity or the protection of endangered species or breeds, including the possible disappearance or long-term damage to those species or breeds	NC
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Colour code: green = consensus (Yes/No), yellow = non-consensus (NC).

Table 8: Outcome of the expert judgement related to the criteria of Section 4 of Annex IV (category D of Article 9) for contagious caprine pleuropneumonia

Criteria to be met by the disease: The disease needs to fulfil all of the following criteria		Final outcome
D	The risk posed by the disease in question can be effectively and proportionately mitigated by measures concerning movements of animals and products in order to prevent or limit its occurrence and spread	Y
the disease fulfils criteria of Sections 1, 2, 3 or 5 of Annex IV of AHL		Y

Colour code: green = consensus (Yes/No).

Table 9: Outcome of the expert judgement related to the criteria of Section 5 of Annex IV (category E of Article 9) for contagious caprine pleuropneumonia

Diseases in category E need to fulfil criteria of Sections 1, 2 or 3 of Annex IV of AHL and/or the following:		Final outcome
E	Surveillance of the disease is necessary for reasons relating to animal health, animal welfare, human health, the economy, society or the environment (If a disease fulfils the criteria as in Article 5, thus being eligible to be listed, consequently category E would apply.)	Y

Colour code: green = consensus (Yes/No).

3.3.1. Non-consensus questions

This section displays the assessment related to each criterion of Annex IV referring to the categories of Article 9 of the AHL where no consensus was achieved in form of tables (Tables 10–13). The proportion of Y, N or 'na' answers is reported, followed by the list of different supporting views for each answer.

Table 10: Outcome of the expert judgement related to criterion 2.1 of Article 9

Question		Final outcome	Response		
			Y (%)	N (%)	na (%)
2.1 (cat. A)	The disease is highly transmissible	NC	25	67	8
2.1 (cat. B, C)	The disease is moderately to highly transmissible	NC	67	25	

NC: non-consensus; number of judges: 12.

Reasoning supporting the judgement

Supporting Yes for 2.1 (cat. A):

- The disease is very readily contagious, and only brief periods of contact are necessary for successful transmission (Nicholas and Churchward, 2012).
- There is limited data, but an R_0 of 2.5 for gazelles is reported, and the morbidity and prevalence in outbreaks suggest high transmissibility.

Supporting Yes for 2.1 (cat. B, C):

- Transmissibility seems variable since various morbidity rates have been reported, depending in particular on the altitude.
- R_0 has been established at around 2.5 for gazelles, in an environment that was very favourable to transmission (high densities of animals held in pens) (Lignereux et al., 2017). Hence, the value for goats in the field may be lower.

Supporting na for 2.1 (cat. A, B, C):

- No published data exist.

Table 11: Outcome of the expert judgement related to criterion 2.2 of Article 9

Question	Final outcome	Response		
		Y (%)	N (%)	na (%)
2.2 (cat. A, B) There are possibilities of airborne or waterborne or vector-borne spread	NC	75	8	17

NC: non-consensus; number of judges: 12.

Reasoning supporting the judgement

Supporting Yes:

- Airborne transmission is suspected to occur, but there is no biological vector-borne transmission.

Supporting No:

- No evidence of indirect transmission has been shown as the mycoplasma is highly fragile in the environment (Nicholas and Churchward, 2012).

Supporting na:

- The fact sheet states that airborne spread is possible, but there are no references to support this.

Table 12: Outcome of the expert judgement related to criterion 5(c) of Article 9

Question	Final outcome	Response		
		Y (%)	N (%)	na (%)
5(c) The disease has a significant impact on the environment, due to the direct impact of the disease or due to the measures taken to control it	NC	0	17	83

NC: non-consensus; number of judges: 12.

Reasoning supporting the judgement

Supporting No:

- There is no evidence of significant effect on wild ruminants/European wildlife. The disease would only affect populations that are not endangered.

Supporting na:

- It is suspected that all wild ruminant species can be affected. Mortality in wild species can be very high. However, there are very few endangered ruminants in the EU and no information of EU wild endangered species that are susceptible.

Table 13: Outcome of the expert judgement related to criterion 5(d) of Article 9

Question	Final outcome	Response		
		Y (%)	N (%)	na (%)
5(d) The disease has a significant impact on a long-term effect on biodiversity or the protection of endangered species or breeds, including the possible disappearance or long-term damage to those species or breeds*	NC	0	17	83

NC: non-consensus; number of judges: 12.

*Endangered breeds are not considered.

Reasoning supporting the judgement

Please see reasoning for Table 12.

3.3.2. Outcome of the assessment of criteria in Annex IV for contagious caprine pleuropneumonia for the purpose of categorisation as in Article 9 of the AHL

As from the legal text of the AHL, a disease is considered fitting in a certain category (A, B, C, D or E corresponding to point (a) to point (e) of Article 9(1) of the AHL) if it is eligible to be listed for Union intervention as laid down in Article 5(3) and fulfils all criteria of the first set from 1 to 2.4 and at least one of the second set of criteria from 3 to 5(d) as shown in Tables 5–9. According to the assessment methodology (EFSA AHAW Panel, 2017), a criterion is considered fulfilled when the outcome is 'Yes'.

A description of the outcome of the assessment of criteria in Annex IV for CCPP for the purpose of categorisation as in Article 9 of the AHL is presented in Table 14.

Table 14: Outcome of the assessment of criteria in Annex IV for contagious caprine pleuropneumonia for the purpose of categorisation as in Article 9 of the AHL

Category	Article 9 criteria										
	1° set of criteria					2° set of criteria					
	1	2.1	2.2	2.3	2.4	3	4	5a	5b	5c	5d
	Geographical distribution	Transmissibility	Routes of transmission	Multiple species	Morbidity and mortality	Zoonotic potential	Impact on economy	Impact on society	Impact on animal welfare	Impact on environment	Impact on biodiversity
A	Y	NC	NC	Y	Y	N	Y	N	Y	NC	NC
B	N	NC	NC	Y	N	N	Y	N	Y	NC	NC
C	N	NC	Y	Y	N	N	N	N	Y	NC	NC
D	Y										
E	Y										

According to the assessment performed here, CCPP complies with the following criteria of the Sections 1–5 of Annex IV of the AHL for the application of the disease prevention and control rules referred to in points (a)–(e) of Article 9(1):

- 1) To be assigned to category A, a disease needs to comply with all criteria of the first set (1, 2.1–2.4) and according to the assessment, CCPP complies with criteria 1, 2.3 and 2.4, and the assessment is inconclusive on compliance with criteria 2.1 and 2.2. To be eligible for category A, a disease needs to comply additionally with one of the criteria of the second set (3, 4, 5a–d) and CCPP complies with criteria 4 and 5b but not with criteria 3 and 5a, and the assessment is inconclusive on compliance with criteria 5c and 5d.
- 2) To be assigned to category B, a disease needs to comply with all criteria of the first set (1, 2.1–2.4) and according to the assessment, CCPP complies with criterion 2.3 but not with criteria 1 and 2.4, and the assessment is inconclusive on compliance with criteria 2.1 and 2.2. To be eligible for category B, a disease needs to comply additionally with one of the criteria of the second set (3, 4, 5a–d) and CCPP complies with criteria 4 and 5b but not with criteria 3 and 5a, and the assessment is inconclusive on compliance with criteria 5c and 5d.
- 3) To be assigned to category C, a disease needs to comply with all criteria of the first set (1, 2.1–2.4) and according to the assessment, CCPP complies with criteria 2.2 and 2.3, but not with criteria 1 and 2.4, and the assessment is inconclusive on compliance with criterion 2.1. To be eligible for category C, a disease needs to comply additionally with one of the criteria of the second set (3, 4, 5a–d), and CCPP complies with criterion 5b, but not with criteria 3, 4 and 5a, and the assessment is inconclusive on compliance with criteria 5c and 5d.
- 4) To be assigned to category D, a disease needs to comply with criteria of Sections 1, 2, 3 or 5 of Annex IV of the AHL and with the specific criterion D of Section 4, with which CCPP complies.
- 5) To be assigned to category E, a disease needs to comply with criteria of Sections 1, 2 or 3 of Annex IV of the AHL and/or the surveillance of the disease is necessary for reasons relating to

animal health, animal welfare, human health, the economy, society or the environment. The latter is applicable if a disease fulfils the criteria as in Article 5, with which CCPP complies.

3.4. Assessment of Article 8

This section presents the results of the assessment on the criteria of Article 8(3) of the AHL about CCPP. The Article 8(3) criteria are about animal species to be listed, as it reads below:

'3. Animal species or groups of animal species shall be added to this list if they are affected or if they pose a risk for the spread of a specific listed disease because:

- a) they are susceptible for a specific listed disease or scientific evidence indicates that such susceptibility is likely; or
- b) they are vector species or reservoirs for that disease, or scientific evidence indicates that such role is likely'.

For this reason, the assessment on Article 8 criteria is based on the evidence as extrapolated from the relevant criteria of Article 7, i.e. the ones related to susceptible and reservoir species or routes of transmission, which cover also possible role of biological or mechanical vectors.³ According to the mapping, as presented in Table 5, Section 3.2 of the scientific opinion on the ad hoc methodology (EFSA AHAW Panel, 2017), the main animal species to be listed for CCPP according to the criteria of Article 8(3) of the AHL are as displayed in Table 15.

Table 15: Main animal species to be listed for contagious caprine pleuropneumonia according to criteria of Article 8 (source: data reported in Section 3.1.1.1)

	Class	Order	Family	Genus/Species
Susceptible	Mammalia	Artiodactyla	Bovidae	Goat (<i>Capra hircus</i>), wild goat (<i>Capra aegagrus</i>), Nubian ibex (<i>Capra ibex nubiana</i>), Laristan mouflon (<i>Ovis orientalis laristanica</i>), gerenuk (<i>Litocranius walleri</i>), Tibetan antelope (<i>Pantholops hodgsonii</i>), Arabian oryx (<i>Oryx leucoryx</i>), Sand gazelles (<i>Gazella marica</i>)
Reservoir	Not identified*			
Vectors	None			

*: Sheep may play the role of domestic reservoirs, although there is no clear evidence on this.

4. Conclusions

TOR 1: for each of those diseases an assessment, following the criteria laid down in Article 7 of the AHL, on its eligibility of being listed for Union intervention as laid down in Article 5(3) of the AHL;

- According to the assessment here performed, CCPP complies with all criteria of the first set and with two criteria of the second set and therefore can be considered eligible to be listed for Union intervention as laid down in Article 5(3) of the AHL.

TOR 2a: for each of the diseases which was found eligible to be listed for Union intervention, an assessment of its compliance with each of the criteria in Annex IV to the AHL for the purpose of categorisation of diseases in accordance with Article 9 of the AHL;

- According to the assessment here performed, CCPP meets the criteria as in Sections 4 and 5 of Annex IV of the AHL, for the application of the disease prevention and control rules referred to in points (d) and (e) of Article 9(1) of the AHL. According to the assessment here performed, it is inconclusive whether CCPP complies with the criteria as in Section 1 of Annex IV of the AHL, for the application of the disease prevention and control rules referred to in point (a) of Article 9(1) of the AHL. Compliance of CCPP with the criteria as in Section 1 is dependent on a decision on criteria 2.1 and 2.2.

³ A vector is a living organism that transmits an infectious agent from an infected animal to a human or another animal. Vectors are frequently arthropods. Biological vectors may carry pathogens that can multiply within their bodies and be delivered to new hosts, usually by biting. In mechanical vectors, the pathogens do not multiply within the vector, which usually remains infected for shorter time than in biological vectors.

TOR 2b: for each of the diseases which was found eligible to be listed for Union intervention, a list of animal species that should be considered candidates for listing in accordance with Article 8 of the AHL.

- According to the assessment here performed, the animal species that can be considered to be listed for CCPP according to Article 8(3) of the AHL are goats and other species of the family Bovidae as susceptible, as reported in Table 15 in Section 3.4 of the present document.

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Abbreviations

AHAW	EFSA Panel on Animal Health and Welfare
AHL	Animal Health Law
CBPP	contagious bovine pleuropneumonia
CCPP	Contagious caprine pleuropneumonia
cELISA	competitive enzyme-linked immunosorbent assay
ICBA	Individual and Collective Behavioural Aggregation
IUCN	International Union for Conservation of Nature

Mccp	<i>Mycoplasma capricolum</i> subsp. <i>capripneumoniae</i>
MLSA	multilocus sequence analysis
Mmm	<i>Mycoplasma mycoides</i> subsp. <i>mycoides</i>
OIE	World Organization for Animal Health
PCR	polymerase chain reaction
PPR	peste des petits ruminants
ToR	Terms of Reference

Annex A – Mapped fact-sheet used in the individual judgement on contagious caprine pleuropneumonia

Annex A can be found in the online version of this output ('Supporting information' section):
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